

# Tell Autumn Trees by COLOR



THE WARM ARRAY OF FALL COLORS that brighten a wooded hillside do more than delight the eye. The colors and patterns reveal, to some extent, the identity of the trees displaying them. Each species has its own range of color change which, combined with site preference, shape, and size, can help us identify many trees on a distant hillside.

The "October Hillside Portrait" characterizes a typical Missouri hillside. It is designed to provoke thought rather than serve as an absolute reference. The scene depicted is a composite of many; the colors, relative placement of trees on the slope and size and shape of each reflect likely occurrences.

Although there is some rhyme and a great deal of reason in the colorful tapestry that graces our autumn hillsides, there is enough variation to keep the game interesting. By reducing a scene to its basics and showing only trees that are broadly distributed across most of the state, we can point out some species that are common to many hillsides. Attempting to guess the identity of a few species adds immeasurably to the enjoyment of our fall leaf-peeping outings.

We can learn a lot about tree species by considering where they occur. The natural placement we see helps us to select the right species and predict the best places to plant them on our own land. We can greatly increase survival of trees we plant if we employ some ecological sensitivity from "reading" the landscape.



Hickory



Black Cherry

Sumac



## Site Preferences

Trees are distributed according to their unique tolerances which determine where they *can* grow. Exposure to sunlight, the availability of moisture and soil conditions affect tree growth and distribution within an acceptable climate. We describe the location of trees according to their position on the hillside: ridgetops, upper and lower slopes, floodplain, edge, and various combinations of these terms. Some thrive on high, windy ridgetops; white oak, shagbark hickory and serviceberry are among them. Others, like black walnut, white ash and pawpaw prefer sheltered lower slopes. Pin oak, cottonwood, and sycamore are a few of the species that can withstand periodic flooding and thus inhabit floodplains. Redbuds and flowering dogwoods can grow on both upper and lower slopes but prefer shade. Sumac and roughleaf dogwood grow at the sunny edge of a forest. Several other species, including green ash, bitternut hickory, and silver maple are adapted to a wide variety of sites. Trees grow where they can and any scheme that attempts to predict where a species will be found is limited by such factors as the competition between some species.

by Robert W. Fluchel  
Education Consultant  
Kansas City

Photos by author



### Shape and Size

Although each manifests a general shape and mature size, individual trees vary widely, primarily as a result of the environmental conditions in which they grow. The amount of sunlight a tree can get is influenced by both terrain and competition with other trees, and largely determines whether a tree's shape and size will reach its genetic potential. Size is also influenced by the amount of water available. Field-grown trees reflect their genetic potential. They are usually symmetrical and relatively wide. Forest-grown individuals differ from their ideal species shape, being sparse and contorted compared to their field-grown relatives. Yet each is adapted to its environment. Trees at the edge of a forest are often sparse on the forest side and full on the field side, reflecting the profound effect of competition. When attempting to identify trees by their shapes, we can be more successful by looking at trees along the edge, rather than those entangled in the forest.

Although size is irrelevant in many cases because we don't know whether a tree is mature, consideration of size can be helpful if applied judiciously. Typically, mature cottonwoods and sycamores are huge; white and red oaks are large; white and green ash are medium sized, and pawpaw and sumac are small. The trees in the hillside portrait may be considered to be of mature size and representative shape. For identification, some notion of relative size and shape is often helpful.

Sugar Maple



Poison Ivy



### What Causes Fall Color?

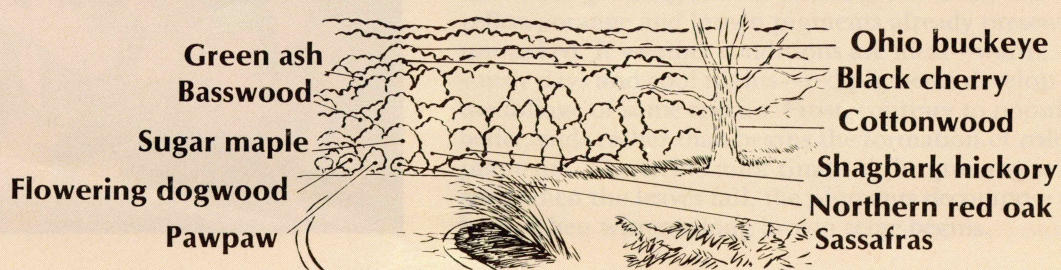
Color appears in leaves as trees prepare for winter dormancy. Shedding the leaves, which are often tattered and worn by the end of the growing season, enables trees to conserve water during the relatively dry months of winter. Not only is there less precipitation during winter months, what little moisture is present is often frozen and thus not available for use by the tree. If leaves remained on most trees, ice formation resulting from freezing temperatures would rupture tender leaf tissue. Accumulations of ice and snow on leaves would snap over-burdened branches. By adopting the deciduous habit most of our broadleaf species have found an effective way to deal with winter's cold and ice.

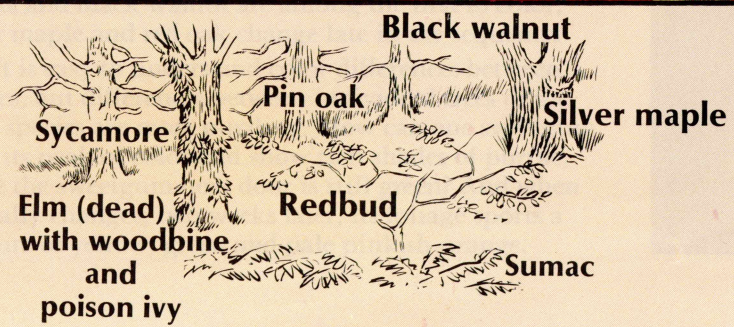
Color formation is, from the trees' perspective, incidental. As day length gradually shortens in the fall, color appears. Chlorophyll, the dominant green pigment which transforms sunlight, carbon dioxide and water into plant food, diminishes in the leaves at the end of the growing season. As the green fades, the yellow, orange and brown pigments already present are unmasked. If weather conditions are ideal—warm, sunny days and cool nights—red pigments develop in the foliage of some species. Frost, contrary to popular belief, ends rather than begins the formation of colorful pigments. The technicolor finale of the growing season ends when the leaves fall, the pigments decompose or both. Then winter's long brown seige begins.

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# October Hillside Portrait

by David Besenger







Green Ash



White Ash

### Variations in Color

Fall color intensity varies dramatically from year to year, species to species, and individual to individual. Some years the hillsides glow with brilliant yellows, flaming oranges, and deep reds. In other years the hillside tapestry pales in comparison, showing only muted yellows, coppers and dull shades of brown. An early hard freeze can ruin all the fun.

Some at their best are drab compared to others. The black walnut's early burst of yellow fades out of our memories when the sugar maples flood the forest scene with vivid reds, blazing oranges, and warm yellows. And yet the hue and tones of color from each species, no matter how bright or subtle, add immeasurably to nature's impressionistic masterpiece. Although the exact timing changes from year to year, the sequence of change, from species to species is fairly predictable. Sumac and black walnut are among the first to color, sugar maple and red oak change late in the sequence.

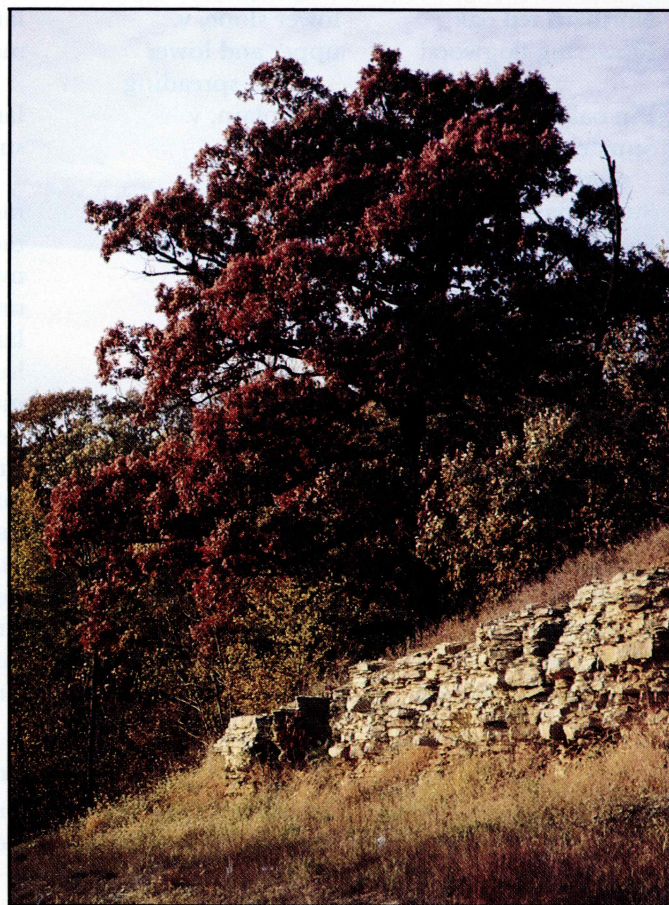
It is easy to understand color differences between species, but differences between individual trees of the same species are more puzzling. How can one sweetgum be at its peak of color and show rich shades of purple, while the sweetgum next door is still green? And when it finally changes, two weeks later, its foliage sports a mixture of yellow, green and pale pinkish-orange.

Like hair color in humans, leaf color can vary greatly from individual to individual, affected by a number of genetic and environmental factors. One thing is certain, the best way to select a tree at a nursery for your yard is to pick the colorful tree in the fall when others of its kind are changing. If you take one that tends to color late, easy to do in the spring, you will be stuck with a tree that may not color soon enough to avoid the killing frost.

### Which Color?

Color descriptions are tricky. People see color differently and the terms we use to describe color are not precise. Short of presenting a spectrographic analysis it is hard to define any color in a universally acceptable way, but by using a good dictionary, we can put our artistic temperament at ease. There are reasonably accurate terms that permit us to describe color according to three of its measurable properties—hue, lightness and saturation. For example, crimson is often used to describe one variation in the fall color of white oak foliage. Crimson is not just a synonym for red. Crimson is defined as a dark (lightness), strong (saturation), red (hue). The word scarlet, often used to describe red oak leaves, is defined as a very bright (lightness), strong (saturation), red (hue). Admittedly, it is more fun to argue over the meaning of burnt orange and wine-colored than to describe colors as objectively as possible. Careful use of these terms makes descriptions of tree foliage a lot more meaningful.

White Oak





Red Oak

### Reading the Landscape

It may be worth your while to compare the landscape portrait with some local hillsides, observing the similarities and what will undoubtedly be the many differences. We find even well thought-out models are incredibly simplistic when compared to the real thing. But it seems to be part of our nature to search for patterns in the landscape and attempt to explain them. Models can distill the essence of nature's handiwork and give us general answers so that next time someone asks "what is that large, wide tree on the ridgetop with purple foliage," we can answer: "it is, according to my 'October Hillside Portrait' a white oak." And if they ask "what about that medium tree on the lower slope with a rounded crown and brilliant light-yellow foliage," we may guess "a green ash," and perhaps be right! Right or wrong, we can look forward to taking leisurely hikes through the hills just to take a closer look and test the accuracy of our guesses.

More than that, we can pause to admire the transient beauty of the autumn woods; it only lasts a few days. Fall is a time for reflection. The sun is still warm and the days are golden, but they, like the colorful leaves, are soon gone. △

### Tell Autumn Trees by Place, Shape and Color

Tree Species	Location	Size-Shape	Color
White ash	lower slope	large, rounded	purple
White oak	ridgetop, v.	large/broad, spreading	purple to crimson
Northern red oak	lower slope, v.	large/oval, open	scarlet
Flowering dogwood	upper and lower slope, spreading	medium/broad,	scarlet
Pin oak	floodplain, v.	large/pyramidal	red
Sumac, smooth or staghorn	edge	small/spreading	red
Sugar maple	lower slope, v.	medium/rounded	red-orange-yellow
Sassafras	slopes, edge	medium/upright	red-orange
Ohio buckeye	lower slope	medium/open, rounded	pale orange-yellow
Basswood	lower slope, v.	medium, cluster, rounded	yellow
Silver maple	floodplain	large/open spreading	yellow
Cottonwood	floodplain	huge/cylindrical	shiny yellow
Green ash	mid-slope, v.	medium/rounded	bright yellow
Bitternut hickory	lower slope, v.	large/open, spreading	bright yellow
Pawpaw	streambank	small/grove	pale yellow
Black walnut	lower slope	large/spreading, open	yellow
Redbud	upper and lower	medium/spreading	yellow-brown
Sycamore	floodplain	huge/open, cylindrical	yellow-brown
Shagbark hickory	ridgetop	large/open, cylindrical	yellow-brown
Serviceberry	ridgetop, edge	small/rounded	reddish-brown or gold
Black cherry	lower slope, edge, v.	large/oval, open	reddish, orange-brown
Roughleaf dogwood	edge, v.	small, tree like shrub spreading	pinkish, purple, pale

#### Miscellaneous

Woodbine	vine on tree	crimson
Poison ivy	vine on tree	scarlet, orange or yellow

Note: v. = variable